COLORADO RIVER RECOVERY PROGRAM **RECOVERY PROGRAM**
FY-99 ANNUAL PROJECT REPORT **PROJECT # 19BC**

I. Project Title: General Hydrology Support

II. Principal Investigator:

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III. Project Summary:

The Service's Division of Water Resources provides basic hydrology information to program researchers and undertakes tasks to support the Recovery Program in basic data collection and support of ongoing research and monitoring projects. Accomplishments include; 1) collecting temperature data at ten sites on the Green River and four sites on the Colorado River, and assembling a database for use by Program researchers; 2) coordinating contracting for sediment and channel monitoring; 3) providing technical hydrology support for a wide range of Recovery Implementation Program activities on a year-to-year basis; 4) providing temperature data and analysis to the Flaming Gorge Biological Opinion Work Group, and; 5) coordinating other Recovery Program efforts relating to hydrology and temperature analysis.

IV. Study Schedule: Initial Year - 1990, Final Year - Ongoing.

V. Relationship to RIPRAP: **Colorado and Green River Action Plans I.**
Provide and protect instream flows.

VI. Accomplishments:

A. Temperature Data Collection

Temperature data collection during FY-99 was again complicated by equipment factors. During 1999, the thermograph located on the Juniper Bridge was stolen again, forcing us to move the thermograph to a new location about 100 feet upstream of the bridge. The data from the Sheep Camp thermograph at RM 98 did have a good record and has, in the past, compared very closely with the Juniper data. The thermograph in Mitten Park was out of the water for a short period of time during late summer, but the data from an adjacent stage recorder, which records both stage and temperature, was used to fill in the record. The current protocol is to deploy two thermographs at each location, each hidden in a different location, to compensate for the malfunctions and theft. We have also expanded the coverage to include a thermograph on the Green River above the confluence of the Yampa River. This thermograph has proven hard to maintain because it is only excisable by boat and we plan to make arrangements for local maintenance of this thermograph by local FWS or Park Service personnel.

The Temperature Database Program was updated and can be easily accessed, it also produces output in several graphic formats. A database of temperature data is assembled each year for each thermograph maintained by the Division of Water Resources. The temperature data collection and database will be graphically represented and placed on the Internet at http://www.r6.fws.gov/ryan/ for access by researchers. This information is also compiled into a report and distributed in hard copy and on diskette at the annual Research Meeting.

B. Hydrology Support for Biological Opinions:

The Division of Water Resources coordinated and monitored endangered fish study releases from Flaming Gorge, Ruedi, and the Aspinall Unit during the spring runoff and post runoff period. The interest of the Recovery Program was represented at the quarterly Flaming Gorge and Aspinall meetings and provides input on flow patterns and protection of water for endangered fish. The Division of Water Resources also provided support to researchers working on studies relating to Flaming Gorge and the Aspinall Unit. Specific work accomplished is addressed under the appropriate work task below.

Flaming Gorge five-year Umbrella, Flow Recommendation Investigation, Flow Protection, Temperature, and Flow Data

Analysis:

During the 1987, 1996, and 1998 runoff seasons, a special project was undertaken to collect information on stage discharge locations at various locations along the Green River. In 1996, with the assistance of FLO Engineering, flow discharge relations were established for Mitten Park, Ouray Refuge, below the confluence of the White and Duchesne Rivers, at McPersons Ranch in Desolation Canyon, and at Bonita Bend in Canyonland National Park. In 1999 the stage recorders were reinstalled at all locations except Desolation Canyon and Canyonlands, which proved to be too remote. The data from the recorders will be used in conjunction with data from approximately 130 cross sections throughout the basin to determine area and timing of inundation, and to calibrate the FLO2D flow routing model.

Flaming Gorge Technical Integration and Preparation of the Synthesis Documents:

The Division of Water Resources continued to provided support in developing data for the synthesis, and worked as a part of the team developing the flow and temperature analysis for the Flaming Gorge Biological Opinion. The Division of Water Resources also provided support to the Park Service in collecting sediment in Dinosaur National Monument during the high release from Flaming Gorge Reservoir.

Colorado River Programmatic Biological Opinion:

A considerable amount of effort was spent under this task. The Division of Water Resources worked closely with the CWCB staff to provided support in developing data, refining the baseline, and reviewing model runs for the Colorado River Programmatic Opinion.

C. Hydrology Support for Development of Flow Recommendations:

With the withdrawal of the instream filings for the Colorado and Yampa Rivers, very little work was required in relation to the development and support of flow recommendations:

Yampa River Operation and Management Plan:

The Division of Water Resources provided assistance to the Program Director's office by coordinating meetings, developing scopes of work for gaging, hydrology model review, and developing annual project reports. The Division of Water Resources also supported the low flow studies on the Yampa River by reviewing documents and attending meetings.

Continued work in developing a report on the 1998 Channel Monitoring work conducted at the Echo Park/Yampa Canyon Razorback spawning bar. Pulling the data and graphics together for the report has taken much longer than expected because of other higher priority work items. The report will be available for review by the end of April 2000.

VII. Recommendations: The work provided is, for the most part, in support of other research projects or activities such as flow delivery, flow quantification, and habitat restoration, all of which have a direct impact on the recovery of the Colorado River endangered fish. The direct quantification of the success of many of the activities is difficult because most of the activities are long-term in nature.

VIII. Project Status: Ongoing and on-track.

IX. FY-99 Budget:

A. Funds provided:	$ 53,000
B. Funds expended:	$ 53,000
C. Difference:	$ 0

X. Status of Data Submission: Not applicable.

XI. Signed: George Smith December 7, 1999.

Principal Investigator Date

APPENDIX: Reports, the temperature data collection, and database will be placed on the Recovery Programs Home Page for access by researchers by December 31, 1999.

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